

**AN EXAMINATION OF FISH CONSUMPTION  
BY INDIANA RECREATIONAL ANGLERS:  
An On-Site Survey**

**Technical Report 99-D-HDFW-2**

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## Table of Contents

	Page
List of Tables .....	ii
Executive Summary.....	iv
Introduction.....	1
Methodology.....	1
Survey Design.....	2
Data Collection.....	2
Demographics of Respondents .....	3
Minority Anglers.....	4
Grams Per Day (gpd) Calculation.....	7
Angler Incomes.....	12
Advisory Awareness .....	17
State Region.....	18
Women of Childbearing Age .....	19
Comparison of Mail and On-Site Survey.....	19
Limitations of Study .....	21
References.....	22
Appendix A: Weighting Survey Data .....	23
Appendix B: Survey Locations .....	29
Appendix C: Survey Instrument .....	31
Appendix D: Variable Frequency.....	37

## List of Tables

Table	Page
Table 1: Race of anglers.....	3
Table 2: Respondent household income .....	4
Table 3: Distribution of typical fish portion sizes for white and minority active consumers.....	4
Table 4: Consumption frequency for white and minority active consuming anglers ....	5
Table 5: Consumption during past 7 days for white and minority active consuming anglers .....	7
Table 6: Grams per day consumed for white and minority active consuming anglers .....	8
Table 7: Consumption rate for white and minority active consuming and potential and active consuming anglers .....	10
Table 8: Advisory awareness for white and minority active consuming anglers .....	10
Table 9: Advisory compliance frequency when deciding to eat catch for white and minority active consumers .....	11
Table 10: Advisory compliance frequency when deciding how to cook or clean catch for white and minority active consumers .....	11
Table 11: Anticipated use of catch for white and minority active consumers.....	12
Table 12: Portions of fish in a meal for active consumers in income quartiles .....	12
Table 13: Fish consumption during the three months prior to the interview for active consumers in income quartiles .....	13
Table 14: Fish consumption during 7 days prior to interview for active consumers in income quartiles.....	14
Table 15: Grams Per Day (GPD) consumed for active consumers in income quartiles.....	14
Table 16: Consumption rate for active consuming and potential and active consuming anglers in income quartiles.....	15

Table	Page
Table 17: Awareness of Indiana Fish Consumption Advisories by active consumers in income quartiles.....	15
Table 18: Advisory compliance for active consumers in income quartiles when anglers decide whether or not to eat.....	16
Table 19: Advisory compliance for active consumers in income quartiles when deciding how to cook and clean.....	16
Table 20: Plans for catch for active consumers in income quartiles.....	17
Table 21: Consumption rate for active consuming anglers and potential and active consuming anglers based on awareness.....	18
Table 22: Consumption rate for active consuming anglers and potential and active consuming anglers based on state region.....	18
Table 23: Advisory awareness for regional active consuming anglers.....	19
Table 24: Respondents' typical fish portion size.....	20
Table 25: Active consumers' Indiana sport caught fish consumption.....	20
Table 26: Consumption rate for active consuming anglers and potential and active consuming anglers in on-site and mail surveys .....	21
Table A.1: Weights assigned to on-site respondent data .....	25
Table A.2: GPD by fishing rate and inverse of fishing rate for weighting purposes..	26

## **Executive Summary**

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Through an on-site survey of Indiana anglers, the consumption patterns of minority and low-income anglers were explored. Interviews were conducted in the summer of 1998 and 946 surveys were completed. Minority anglers composed 31.8% of the respondents, with African American anglers accounting for the majority of this group (25.1% of all respondents). Respondents reporting household incomes below \$25,000 comprised 30.9% of the respondents. Of the total interviewed, one third were classified as active consumers, meaning that they ate Indiana sport caught fish during the three-month recall period. Consumption data were weighted by the inverse of fishing frequency to correct for participation bias from active anglers in the on-site study.

Minority active consuming anglers had a mean gram per day (gpd) consumption of 27.2 grams, which is significantly higher than the white consuming anglers who averaged 20.0 gpd. The awareness of state fish consumption advisories was assessed for these groups with 75.4% of white active consumers reported advisory awareness as did 70.0% of the minority consumers.

To examine the anglers based on income, the respondents were divided into quartiles. The first quartile of active anglers, reporting a household income below \$25,000 averaged 18.9 gpd. The second quartile (\$25,000-\$34,999) averaged 18.8 gpd and the third quartile (\$35,000-\$49,999) averaged 15.2 gpd. The highest income, those reporting an income \$50,000 or above, ate an average of 48.9 gpd. There was a significant difference in grams of Indiana sport caught fish consumed per day based on income. Among the income quartiles, there was no difference in advisory awareness.

Angler consumption rate was also examined based on the level of awareness of Indiana fish consumption advisories reported by the anglers. Active consuming anglers reporting that they were very aware of advisories ate an average of 35.2 gpd and those with general awareness consumed 14.1 gpd. Consumers who were not aware of the advisories had a mean gpd of 21.3.

Based on interview location, angler fish consumption rates were compared to determine if there was a difference in consumption rate based on fishing region.

Northern active consuming anglers averaged 14.0 gpd, central active consuming anglers averaged 28.6 gpd, and southern active consumers averaged 23.3 gpd. There was a statistically significant difference between these groups in consumption rates. There was no difference in advisory awareness across state regions.

# **An Examination of Fish Consumption by Indiana Recreational Anglers: An On-Site Survey**

Final Report  
June 30, 2000

## **Researchers**

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## **Introduction**

In the examination of fish consumption patterns among Indiana anglers, a difference was suspected in the consumption patterns of lower-income and minority anglers compared to other anglers. Since a statewide mail survey of licensed Indiana anglers did not specifically address these sub-populations of anglers, a study was designed to target these groups through an on-site survey. Consumption practices, advisory awareness, and advisory compliance levels were examined in these fishermen.

## **Methodology**

An on-site interview was selected to collect data with a focus on minority and low-income anglers. Survey locations were selected based on recommendations of Indiana Fish and Wildlife personnel, local park officials, other government employees, and members of private fishing associations. Study sites were located in the Hammond/East Chicago area, Fort Wayne, Indianapolis, Evansville, and Jeffersonville (Appendix B).

A two-page survey was constructed based on key questions from the mail survey by Sheaffer et al. (1999) of licensed Indiana anglers. The survey was divided into three main areas: location based questions, consumption related questions, and demographics. The survey was also translated into Spanish (Appendix C).

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*Funding for this project was provided by the Indiana Department of  
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## **Survey Design**

It is difficult to get anglers to accurately recall the size of the portion that they eat. These data were vital in calculating an estimated annual consumption of a population. Black and white photographs of representative fish portion sizes were used to aid in recall. Since the photograph was not the actual size of the fish portion, the respondent had to make an evaluation of the portion in relation to other objects, such as plate size and silverware, included for visual reference (West et al, 1995). Several studies have utilized a process in which respondents view two photographs that represent 8 ounces of fish and were asked to respond if their typical portion size is smaller, larger, or about the same as the photograph. This study utilized four black and white photographs of various fish portion sizes – 6 ounces, 8 ounces, 10 ounces and 12 ounces. Anglers were asked to indicate which picture best represented a typical portion of fish that they consumed during an average meal of Indiana sport caught fish. Respondents were able to indicate portion sizes from zero ounces (do not eat) to 16 ounces. The photographs are identical to those employed in the Sheaffer et al. (1999) study.

## **Data Collection**

The on-site surveys were conducted during the summer of 1998, beginning in late April and continuing through August, thus providing a three month recall period that began in late January. The interviews were conducted on the weekends, with few exceptions, in order to maximize the number of anglers encountered. Surveys were not performed on some days or portions of some days due to inclement weather.

The angler survey methods used by Cable and Udd (1990) were employed. Interviewers approached individuals actively fishing and asked them to participate in a brief survey. If an individual refused to participate in the survey, time and date, location, sex, assumed races, and estimated age were recorded. When an angler agreed to participate in the survey, the two-page questionnaire was administered orally and the interviewer recorded the responses. Laminated copies of the survey and fish portion pictures were provided for the angler to look at during the interview. When the interview was complete, the interviewer provided the angler with a card that described the project and included contact information should they have any questions (Appendix C). The

interviewer then moved to the next active angler at the site. Only one member of each household was interviewed. Although some anglers were encountered more than once on the same day or on different days, data were only collected at the first meeting.

Interviewers attempted to administer the survey 975 times and were refused on 29 occasions, resulting in a response rate of 97%. When assessing differences between minority and white respondents, a t-test was employed with an  $\alpha=0.05$  for significance. Chi-square tests were used to compare categories of anglers with different characteristics.

### Demographics of Respondents

Males (86%) comprised the majority of anglers. White anglers represented two-thirds of the respondents and African American anglers accounted for one quarter of the anglers. The remaining 6.7% of the respondents were divided among the other race groups (Table 1).

Table 1: Race of anglers (N=938)

Race	Percent of Anglers (%)
Asian American or Pacific Islander	1.1
White, not Hispanic	68.2
Hispanic American	3.4
African American	25.1
Native American Indian	0.7
Mixed Race	0.5
Other	1.0

In terms of household income, there was a distribution of anglers in the various categories (Table 2). To analyze the data, the anglers were divided onto quartiles based on their household income with the first quartile (N=252) consisting of anglers with a household income below \$25,000, representing 30.9% of the respondents. The second quartile (N=188) was 23.1% of the anglers possessing a household income between

\$25,000 and \$34,999. The third quartile (N=160) was comprised of anglers with household incomes between \$35,000 and \$49,999 (19.6%). The final quartile (N=215) included those with incomes of \$50,000 or more and was 26.4% of the income-reporting anglers.

Table 2: Respondent household income (N=815)

Household Income	Percent of Anglers (%)
Under \$5,000	4.5
\$5,000 - \$9,999	2.7
\$10,000 - \$14,999	4.8
\$15,000 - \$24,999	18.9
\$25,000 - \$34,999	23.1
\$35,000 - \$49,999	19.6
\$50,000 - \$74,999	19.8
\$75,000 or above	6.6

### Minority Anglers

The mean portion size of Indiana sport caught fish eaten by consuming white anglers in a typical meal was 11.3 ounces (320.4 grams). Minority consuming anglers averaged 10.4 ounces (294.8 grams) in a meal. Table 3 shows the distribution of numbers of active anglers reporting different portion sizes. White and minority active consumers are compared.

Table 3: Distribution of typical fish portion sizes for white and minority active consumers

What size portion do you normally consume in a typical meal?	White Active Consumers (%) N=177	Minority Active Consumers (%) N=142
Less than 4 ounces	0	1.4
4 ounces (1/4 lb)	0	1.4
6 ounces	10.2	9.9
8 ounces (1/2 lb)	19.8	26.1
10 ounces	19.8	20.4
12 ounces (3/4 lb)	20.9	22.5
14 ounces	2.8	4.2
16 ounces (1 lb)	26.6	14.1
<i>Mean portion size</i>	11.3	10.4

A t-test for differences between the mean portion sizes for active consuming anglers was conducted. White and minority active consumers were compared. The difference between the means is statistically significant at the 0.05 level.

Portion Size: T-test for equality of means across race categories

Group	N	Mean	Std. Dev.
White	177	11.3	3.4
Minority	143	10.4	3.2
Significance (p-value):	0.010		

Anglers were asked to report their Indiana sport caught fish consumption frequency for a three-month recall period. Minority anglers ate fish with a greater frequency than their white counterparts. A total of 8.4% of the white anglers reported eating sport caught fish more than once a week; 14.7% of the minority anglers reported this same frequency. The mode for white anglers was less than once a month, while the mode for minority anglers was once a month (Table 4).

Table 4: Consumption frequency for white and minority active consuming anglers

How often in the last three months did you eat Indiana sport-caught fish?	White Active Consumers (%) N=177	Minority Active Consumers (%) N=143
Less than once a month	32.8	21.0
Once a month	26.6	25.2
2-3 days per month	19.2	18.9
Once a week	13.0	20.3
2-4 days per week	7.3	13.3
5-7 days per week	1.1	1.4
<i>Mean meal frequency</i>	2-3 meals/month	3-4 meals/month

The mean meal frequency value for white consuming anglers was 2-3 meals per month, while the mean value for minority consuming anglers was between 3 and 4 meals per month. A t-test for the difference between mean meal frequency values was

conducted to compare the two racial categories. The difference between means is statistically significant at the 0.05 level.

Meal Frequency: T-test for equality of means across race categories

Group	N	Mean	Std. Dev.
White	177	2.6	3.8
Minority	143	3.6	4.4
Significance (p-value):	0.034		

Anglers were also asked to recall their consumption of Indiana sport caught fish for themselves and other members of their household for the week preceding the interview. More minority consumers and their families reported eating fish in the week prior to the interview compared to white consuming anglers. Using Chi-Square analysis, it is evident that the difference between white and minority active consumers for their own weekly consumption levels was significant at the 0.05 level. This was also true when comparing the consumption levels for other household members among the different racial categories (Table 5). Over half of the minority consuming anglers had eaten fish in the 7 days before the interview, compared to 35.6% of white anglers. Again, in terms of other household members' consumption, 43.6% of minority consumers reported that other members of their households had eaten fish in the week before the interview compared to 27.6% of the white anglers.

Table 5: Consumption during past 7 days for white and minority active consuming anglers

In the last week, did you eat any Indiana sport-caught fish?	White Active Consumers (%) N=174	Minority Active Consumers (%) N=141
Yes	35.6	51.8
No	64.4	48.2

Chi-Square Test: Statistically Significant (p-value = 0.004)

In the last week, did any other member of your household eat Indiana sport-caught fish?	White Active Consumers (%) N = 174	Minority Active Consumers (%) N = 140
Yes	27.6	43.6
No	72.4	56.4

Chi-Square Test: Statistically Significant (p-value = 0.003)

### Grams Per Day (gpd) Calculation

Using the portion size and meal frequency reported by the anglers, the amount of fish consumed was calculated into a daily amount called grams per day (gpd) consumption. The method used was identical to that used by Sheaffer et al. (1999). The calculation used to determine an angler's gpd was:

$$C_{\text{daily}} = \frac{(\text{ps}) (\text{m}) (28.35 \text{ grams/oz})}{30}$$

Where:

$C_{\text{daily}}$  = daily consumption of sport caught fish (ounce)

ps = portion size (ounces)

m = number of meals per month

less than once a month      m = 0.5

Once a month      m = 1

2-3 days a month      m = 2.5

Once a week      m = 4

2-4 days a week      m = 12

5-7 days a week      m = 24

Not at all      m = 0

## Weighting Consumption Data

It was important to correct for the bias from highly active anglers when calculating the consumption rate for Indiana sport caught fish. Those who fish frequently were more likely to be sampled in an on-site survey than those who fish infrequently. Averaging consumption rates across all respondents would have resulted in an artificially high consumption rate value. For this reason, it was necessary to weight consumption rates to correct for this participation bias. This is achieved by weighting each respondent by the inverse of fishing activity rate. Weighting results in an appropriate mean consumption rate calculation. The weighting method is discussed further in Appendix A.

Table 6 shows the distribution of gpd values for white and minority active consuming anglers across different consumption levels using weighted data. The mean values are included for reference.

Table 6: Grams per day consumed for white and minority active consuming anglers

Grams Per Day Consumption	White Active Consumers (%) N=177	Minority Active Consumers (%) N=143
<5 grams/day	36.2	29.0
5 – 9.9 grams/day	22.0	30.2
10 – 14.9 grams/day	8.3	9.7
15 – 19.9 grams/day	10.6	5.9
20 – 29.9 grams/day	6.8	3.8
30 – 49.9 grams/day	8.2	8.3
50 – 99.9 grams/day	2.2	4.3
100 – 199.9 grams/day	5.7	8.7
> 200 grams/day	0	.1
<i>Mean gpd value</i>	20.0	27.2

Data are weighted by the inverse of fishing frequency.

The gpd consumption for minority active consumers, with a mean of 27.2 grams, was statistically larger than the white active consumer mean of 20.0 gpd. A t-test for the difference between means was conducted. The difference between the gpd means is statistically significant at the 0.05 level.

GPD for Active Consumers: T-test for equality of means across race categories

Race Category	N	Mean	Std. Dev.
White	177	20.0	33.0
Minority	143	27.2	45.7
Significance (p-value):	0.000		

Data are weighted by the inverse of fishing frequency.

Anglers were also divided into groups as active and potential consumers. *Active consumers* are those anglers who reported eating Indiana sport caught fish in the three months prior to the interview as well as provided a typical portion size. *Potential consuming anglers* were those who, while not consuming fish in the three-month recall period, reported a portion of fish that they have eaten on another occasion. Anglers identified as potential consumers were then included in the calculation by assigning the monthly consumption frequency a value of zero (N=260).

Consumption rates reported in Table 7 show the gpd consumption rate for white and minority active consuming and potential and active consuming anglers. As previously stated, there was a significant difference between active minority and white consumers. Mean gpd values were compared between white (potential and active consumers combined) and minority (potential and active consumers combined) in a t-test. The difference in means for potential and active consumers between races is statistically significant at the 0.05 level.

GPD for Potential and Active Consumers: T-test for equality of means by race categories

Group	N	Mean	Std. Dev.
White	361	6.8	21.4
Minority	217	15.3	36.9
Significance (p-value):	0.000		

Data are weighted by the inverse of fishing frequency.

Table 7: Consumption rate for white and minority active consuming and potential and active consuming anglers

	Active Consumers		Potential & Active Consumers	
	White N=177	Minority N=143	White N=361	Minority N=217
Mean gpd	20.0	27.2	6.8	15.3
Median gpd	7.6	7.6	0	3.8
Mode gpd	3.8	5.7	0	0
Percentiles				
50 <sup>th</sup>	7.6	7.6	0	3.8
80 <sup>th</sup>	23.6	30.2	5.7	13.2
90 <sup>th</sup>	37.8	90.7	15.1	37.8
95 <sup>th</sup>	113.4	136.1	37.8	90.7
99 <sup>th</sup>	181.4	181.4	113.4	181.4

Data are weighted by the inverse of fishing frequency.

Anglers were also asked to self identify their level of awareness of Indiana's fish consumption advisories. There was not a statistically significant difference between minority and white active consuming respondents based on a Chi-Square test (Table 8).

Table 8: Advisory awareness for white and minority active consuming anglers

How aware of consumption advisory warnings for Indiana sport-caught fish are you?	White Active Consumers (%) N=175	Minority Active Consumers (%) N=143
Not aware	24.6	30.1
Generally aware	34.3	33.6
Very aware	41.1	36.4

Chi-Square Test: Differences Not Significant (p-value = 0.508)

Anglers were also asked about their level of compliance with the consumption advisories. There was a difference between the racial groups in terms of following the advisories as active consumers when deciding whether or not to eat their catch. Almost half of the minorities reported that they always followed the advisories (48.9%) compared to about 39.7% of the white consuming anglers. A Chi-Square test revealed that the races differed in how often they following advisories for deciding when to eat and produced a statistically significant result (Table 9). Voluntary compliance responses

in terms of using the cooking and cleaning methods provided in the advisories were examined. The original data based on categories is provided so that percentages can be compared (Table 10).

Table 9: Advisory compliance frequency when deciding to eat catch for white and minority active consumers

How frequently do you follow the fish consumption advisory warnings when you decide whether or not to eat Indiana sport-caught fish?	White Consumers (%) N=174	Minority Consumers (%) N=139
Never	12.6	8.6
Rarely	5.2	2.9
Sometimes	4.6	7.2
Usually	20.1	8.6
Always	39.7	48.9
Not Aware	17.8	23.7

Chi-Square Test: Statistically Significant (p-value = 0.027)

Table 10: Advisory compliance frequency when deciding how to cook or clean catch for white and minority active consumers

How frequently do you follow the fish consumption advisory warnings when <u>cleaning or cooking</u> Indiana sport-caught fish?	White Consumers (%) N=171	Minority Consumers (%) N=135
Never	14.0%	15.6%
Rarely	2.9%	1.5%
Sometimes	5.3%	0.7%
Usually	11.7%	9.6%
Always	43.9%	45.2%
Not Aware	22.2%	27.4%

In the on-site survey, anglers were asked what they intended to do with their catch from the day. White and minority active consumers varied by plans for their catch. A Chi-Square test showed that races differed across categories, producing a statistically significant result. Slightly more than half of the white active consumers planned to use the catch as a meal in their home while 71.2% of the minority respondents indicated that this was what they planned to do. Also, 16.5% of the minorities indicated that they were

going to give their catch to others compared to 2.9% of white active consumers (Table 11).

Table 11: Anticipated use of catch for white and minority active consumers

What will you do with your catch today?	White Active Consumers (%) N=175	Minority Active Consumers (%) N=139
Use it for a meal in my household	52.6	71.2
Give it to others outside of my household	2.9	16.5
Release or Discard	44.6	12.2

Chi-Square Test: Statistically Significant (p-value = 0.000)

### Angler Incomes

The anglers were divided into four categories based on their incomes. Analysis was then carried out to identify differences or similarities based on household income.

Looking at portion sizes reported by the consumers in the quartiles, the results were very similar. The mean portion reported by the lowest quartile was 10.7 ounces (303.3 grams), and the second quartile had a mean of 11.2 ounces (317.5 grams). The third quartile averaged 10.4 ounces (294.8 grams) of sport caught fish in a typical meal, and those with the highest incomes had a mean of 11.5 ounces (326.0 grams) (Table 12).

Table 12: Portions of fish in a meal for active consumers in income quartiles

What size portion do you normally consume in a typical meal?	1 <sup>st</sup> Quartile Consumers (%) N=100	2 <sup>nd</sup> Quartile Consumers (%) N=62	3 <sup>rd</sup> Quartile Consumers (%) N=55	4 <sup>th</sup> Quartile Consumers (%) N=60
Less than 4 ounces	1.0	0	0	0
4 ounces (1/4 lb)	2.0	0	0	0
6 ounces	12.0	12.9	14.5	1.7
8 ounces (1/2 lb)	26.0	19.4	23.6	18.3
10 ounces	14.0	16.1	23.6	30.0
12 ounces (3/4 lb)	19.0	24.2	20.0	23.3
14 ounces	4.0	1.6	3.6	6.7
16 ounces (1 lb)	22.0	25.8	14.5	20.0
<i>Mean portion size</i>	10.7	11.2	10.4	11.5

The frequencies of Indiana sport caught fish consumption among the anglers from different income quartiles were compared. The highest income quartile had a slightly higher frequency of consumption. The mode for this group was the ‘once a month’ response while for the other three quartiles, the modal response was ‘less than once a month’ (Table 13).

Table 13: Fish consumption during the three months prior to the interview for active consumers in income quartiles

How often in the last three months did you eat Indiana sport-caught fish?	1 <sup>st</sup> Quartile Consumers (%) N=101	2 <sup>nd</sup> Quartile Consumers (%) N=62	3 <sup>rd</sup> Quartile Consumers (%) N=55	4 <sup>th</sup> Quartile Consumers (%) N=60
Less than once a month	32.7	32.3	32.7	16.7
Once a month	25.7	25.8	21.8	28.3
2-3 meals per month	19.8	19.4	18.2	18.3
Once a week	12.9	12.9	18.2	21.7
2-4 meals per week	6.9	9.7	9.1	13.3
5-7 meals per week	2.0	0	0	1.7
<i>Modal category</i>	Less than 1x/month	Less than 1x/month	Less than 1x/month	1x/month

When reducing the recall period and asking the consuming anglers if they and their family members ate sport caught fish during the week prior to the interview, no significant differences were detected based on Chi-Square statistics. Consumption was lowest in the two middle quartiles for the active consuming anglers, and the highest income quartile reported the greatest percentage of household members eating Indiana sport caught fish.

Table 14: Fish consumption during 7 days prior to interview for active consumers in income quartiles

In the last week, did you eat any Indiana sport-caught fish?	1 <sup>st</sup> Quartile Consumers (%) N=99	2 <sup>nd</sup> Quartile Consumers (%) N=61	3 <sup>rd</sup> Quartile Consumers (%) N=55	4 <sup>th</sup> Quartile Consumers (%) N=60
Yes	43.4	36.1	36.4	53.3
No	56.6	63.9	63.6	46.7

Chi-Square Test: Differences Not Significant (p-value = 0.187)

In the last week, did any other member of your household eat Indiana sport-caught fish?	N=98	N=61	N=55	N=60
Yes	33.7	31.1	34.5	43.3
No	66.3	68.9	65.5	56.7

Chi-Square Test: Differences Not Significant (p-value = 0.517)

The consumption rate was calculated in terms of grams per day (gpd) for the anglers in the income quartiles. The first quartile had a mean consumption rate of 18.9 gpd, the second quartile averaged 18.8 gpd, and the third quartile averaged 15.2 gpd (Table 15). The fourth quartile with the highest income had the highest average consumption rate of 48.8 gpd.

Table 15: Grams Per Day (GPD) consumed for active consumers in income quartiles

Grams Per Day Consumption	1 <sup>st</sup> Quartile Consumers (%) N= 101	2 <sup>nd</sup> Quartile Consumers (%) N= 62	3 <sup>rd</sup> Quartile Consumers (%) N= 55	4 <sup>th</sup> Quartile Consumers (%) N= 60
<5 grams/day	35.1	39.0	40.2	22.8
5 – 9.9 grams/day	28.8	20.5	22.6	24.2
10 – 14.9 grams/day	10.9	8.8	3.4	12.2
15 – 19.9 grams/day	6.0	10.0	11.2	.4
20 – 29.9 grams/day	2.9	4.1	15.3	4.2
30 – 49.9 grams/day	9.2	7.3	2.4	10.0
50 – 99.9 grams/day	1.6	9.6	2.5	1.5
100 – 199.9 grams/day	5.3	.7	2.4	24.7
> 200 grams/day	0.2	0	0	0
<i>Mean gpd value</i>	18.9	18.8	15.2	48.8

Data are weighted by the inverse of fishing frequency.

As with the minority and white anglers, the anglers in the four income categories were examined both in terms of active and potential consumers. Percentages are shown in Table 16.

Table 16: Consumption rate for active consuming and potential and active consuming anglers in income quartiles

	Active Consumers				Potential & Active Consumers			
	1 <sup>st</sup> Quart N= 101	2 <sup>nd</sup> Quart N= 62	3 <sup>rd</sup> Quart N= 55	4 <sup>th</sup> Quart N= 60	1 <sup>st</sup> Quart N= 180	2 <sup>nd</sup> Quart N= 117	3 <sup>rd</sup> Quart N= 91	4 <sup>th</sup> Quart N= 126
Mean gpd	18.9	18.8	15.2	48.9	10.2	7.4	6.8	13.6
Median gpd	7.6	7.6	5.7	11.3	3.8	0	0	0
Mode gpd	3.8	3.8	5.7	4.7	0	0	0	0
Percentiles								
50 <sup>th</sup>	7.5	7.6	5.7	11.3	3.8	0	0	0
80 <sup>th</sup>	18.9	23.6	23.6	113.4	9.5	7.6	5.7	7.6
90 <sup>th</sup>	37.8	60.5	23.6	181.4	23.6	15.1	22.7	37.8
95 <sup>th</sup>	136.1	90.7	45.4	181.4	37.8	37.8	23.6	113.4
99 <sup>th</sup>	136.1	90.7	158.8	181.4	136.1	90.7	136.1	181.4

Data are weighted by the inverse of fishing frequency.

Anglers were asked to report their level of awareness of Indiana's fish consumption advisories. Results were relatively consistent across the income groups of consuming anglers with the upper most income quartile reporting slightly lower levels of 'not aware' (Table 17). There was no statistically significant difference between the groups based on a Chi-Square test.

Table 17: Awareness of Indiana Fish Consumption Advisories by active consumers in income quartiles

How aware of consumption advisory warnings for Indiana sport-caught fish are you?	1 <sup>st</sup> Quartile Consumers (%) N=100	2 <sup>nd</sup> Quartile Consumers (%) N=62	3 <sup>rd</sup> Quartile Consumers (%) N=55	4 <sup>th</sup> Quartile Consumers (%) N=59
Not aware	25.0	27.4	25.5	20.3
Generally aware	37.0	40.3	25.5	44.1
Very aware	38.0	32.3	49.1	35.6

Chi-Square Test: Differences Not Significant (p-value = 0.424)

Consuming anglers were asked to report their level of voluntary compliance with the Indiana fish consumption advisories. Two separate questions solicited information on compliance. One asked if they followed the advisories when deciding whether or not to eat their catch. The second asked if they followed the advisories when determining cooking and cleaning methods. For both aspects of compliance, a statistical difference was not found between the income quartiles based on Chi-Square tests (Table 18 and Table 19).

Table 18: Advisory compliance for active consumers in income quartiles when anglers decide whether or not to eat

How frequently do you follow the fish consumption advisory warnings when you decide whether or not to <u>eat</u> Indiana sport-caught fish?	1 <sup>st</sup> Quartile Consumers (%) N=98	2 <sup>nd</sup> Quartile Consumers (%) N=62	3 <sup>rd</sup> Quartile Consumers (%) N=53	4 <sup>th</sup> Quartile Consumers (%) N=58
Never	8.2	16.1	9.4	15.5
Rarely	5.1	3.2	3.8	3.4
Sometimes	7.1	3.2	9.4	3.4
Usually	11.2	17.7	17.0	17.2
Always	50.0	41.9	37.7	48.3
Not Aware	18.4	17.7	22.6	12.1

Chi-Square Test: Differences Not Significant (p-value = 0.758)

Table 19: Advisory compliance for active consumers in income quartiles when deciding how to cook and clean

How frequently do you follow the fish consumption advisory warnings when <u>cleaning</u> or <u>cooking</u> Indiana sport-caught fish?	1 <sup>st</sup> Quartile Consumers (%) N=95	2 <sup>nd</sup> Quartile Consumers (%) N=61	3 <sup>rd</sup> Quartile Consumers (%) N=52	4 <sup>th</sup> Quartile Consumers (%) N=56
Never	12.6	18.0	11.5	17.9
Rarely	2.1	1.6	0	5.4
Sometimes	5.3	0	7.7	0
Usually	11.6	14.8	7.7	7.1
Always	44.2	47.5	50.0	48.2
Not Aware	24.2	18.0	23.1	21.4

Chi-Square Test: Differences Not Significant (p-value = 0.386)

Anglers were also asked what they planned to do with their catch on the day of the interview. The majority of the consumers planned to use their catch as a meal in their

household. Slightly more of the upper income anglers planned to release or discard their catch, but this difference was not statistically significant (Table 20).

Table 20: Plans for catch for active consumers in income quartiles

What will you do with your catch today?	1 <sup>st</sup> Quartile Consumers (%) N=99	2 <sup>nd</sup> Quartile Consumers (%) N=62	3 <sup>rd</sup> Quartile Consumers (%) N=52	4 <sup>th</sup> Quartile Consumers (%) N=60
Use it for a meal in my household	60.6	64.5	55.8	53.3
Give it to others outside of my household	10.1	6.5	5.8	10.0
Release or Discard	29.3	29.0	38.5	36.7

Chi-Square Test: Differences Not Significant (p-value = 0.752)

### Advisory Awareness

When looking at the effect of advisory awareness level on gpd consumption rate, no relationship was found among the on-site respondents. The highest mean gpd (35.2 grams) came from the group of active consumers reporting that they were very aware of the Indiana advisories. Those who reported not being aware of the advisories had a mean of 21.3. Those who were generally aware of the advisories reported a mean gpd of 14.1 grams (Table 21).

Table 21: Consumption rate for active consuming anglers and potential and active consuming anglers based on awareness

		Active Consumers			Potential & Active Consumers		
		Not Aware N= 88	Generally Aware N= 108	Very Aware N= 124	Not Aware N= 179	Generally Aware N= 194	Very Aware N= 207
Mean gpd		21.3	14.1	35.2	9.1	5.8	15.8
Median gpd		5.7	7.6	15.1	0	0	0
Mode gpd		3.8	4.7	4.7	0	0	0
Percentiles							
	50 <sup>th</sup>	5.7	7.6	15.1	0	0	0
	80 <sup>th</sup>	18.9	15.1	37.8	7.6	7.6	18.9
	90 <sup>th</sup>	60.5	28.4	90.7	15.1	14.2	37.8
	95 <sup>th</sup>	136.1	45.4	181.4	37.8	23.6	90.7
	99 <sup>th</sup>	181.4	136.1	181.4	136.1	90.7	181.4

Data are weighted by the inverse of fishing frequency.

### State Region

The anglers were examined based on the region of the state in which the interview was conducted - north, central, or south. The central and south regions showed higher average consumption rates than in the North.

Table 22: Consumption rate for active consuming anglers and potential and active consuming anglers based on state region

		Active Consumers			Potential & Active Consumers		
		North N= 112	Central N= 115	South N= 95	North N= 218	Central N= 203	South N= 161
Mean gpd		14.0	28.6	23.3	4.8	12.0	12.3
Median gpd		7.6	7.6	7.6	0	0	2.8
Mode gpd		7.6	4.7	3.8	0	0	0
Percentiles							
	50 <sup>th</sup>	7.6	7.6	7.6	0	0	2.8
	80 <sup>th</sup>	18.9	30.2	23.6	7.6	7.6	11.3
	90 <sup>th</sup>	30.2	90.7	90.7	11.3	23.6	37.8
	95 <sup>th</sup>	37.8	181.4	136.1	23.6	90.7	113.4
	99 <sup>th</sup>	136.1	181.4	136.1	60.5	181.4	136.1

Data are weighted by the inverse of fishing frequency.

Active consuming angler awareness of Indiana fish consumption advisories was also assessed based on the region the angler was fishing in at the time of the interview. There was no difference between the regions based on a Chi-Square test (Table 23).

Table 23: Advisory awareness for regional active consuming anglers

How aware of consumption advisory warnings for Indiana sport-caught fish are you?	North Consumers (%) N=111	Central Consumers (%) N=114	South Consumers (%) N=95
Not aware	26.1	27.2	29.5
Generally aware	28.8	35.1	37.9
Very aware	45.0	37.7	32.6

Chi-Square Test: Differences Not Significant (p-value = 0.457)

### **Women of Childbearing Age**

In studying fish consumption, there is special concern for women of childbearing age. For this study, childbearing age is assumed to be 18-45 years of age. There were only 40 consuming female anglers representing this category in the study. Their mean daily consumption was 39.6 gpd.

### **Comparison of Mail and On-Site Surveys**

There was a methodological difference between the two surveys. The mail survey reached only licensed anglers. The on-site survey was administered to anyone actively fishing and did not ask about license possession. The population, by design, was also very different. The respondents to the mail survey were predominately white (94.5%) while the on-site survey had more racial diversity (25.1% African American and 68.2% white). In terms of income, 19.8% of the mail survey respondents indicated a household income below \$25,000 compared with 26.7% of the on-site survey respondents.

Some other differences were detected when comparing the two studies. In the on-site survey, 35% of the respondents indicated that they were unaware of the Indiana fish consumption advisories compared to 23.7% of the mail respondents.

When looking at the typical portion size eaten by consuming anglers, a clear difference can be seen between the two studies. Respondents in the mail survey ate considerably smaller portions than did those in the on-site survey (Table 24). Eighteen percent of the on-site consuming anglers reported that they ate 16 ounces (one pound) in a typical meal compared to 10.7% of the mail respondents.

Table 24: Respondents' typical fish portion size

Typical Portion	On-Site N= 582 (%)	Mail N= 1256 (%)
Less than 4 ounces	0.7	5.8
4 ounces	0.9	7.7
6 ounces	13.2	13.5
8 ounces	24.6	20.5
10 ounces	20.3	16.9
12 ounces	19.4	21.3
14 ounces	2.9	3.6
16 ounces	18.0	10.7

There was also a noticeable difference in consumption frequency between the two studies with the on-site survey respondents indicating that they consumed Indiana sport caught fish more frequently (Table 25). Sixteen percent of the on-site respondents reported eating sport caught fish once a week during the three months prior to the interview compared to 8.5% of the mail survey respondents. Additionally, 10% of the on-site respondents indicated that they ate sport caught fish 2-4 days per week; 4.7% of the mail survey respondents reported this frequency of consumption.

Table 25: Active consumers' Indiana sport caught fish consumption

Fish Consumption Frequency	On-site N=322 (%)	Mail N=1045 (%)
Less than once a month	27.6	35.9
Once a month	26.1	24.7
2-3 days a month	18.9	26.0
Once a week	16.1	8.5
2-4 days a week	9.9	4.7
5-7 days a week	1.2	0.2

The anglers surveyed on-site indicated that they ate larger portions of sport caught fish and that they consumed this fish with a greater frequency. This led to a difference in the gpd between the surveys (Table 26); however, the difference in gpd consumption was small among the active consumers. The mean gpd reported in the mail survey was 19.8 gpd compared to 22.9 gpd found in the on-site survey. The on-site survey had a higher proportion of potential consuming anglers (anglers who reported a portion size but did not report consuming during the three month recall period) than the mail survey. This high percentage of potential consuming anglers causes the gpd to be deflated much more in the on-site survey. When both active and potential consuming anglers were included in the gpd calculation, the result for the on-site survey was 9.8 gpd and for the mail survey was 16.4 gpd.

Table 26: Consumption rate for active consuming anglers and potential and active consuming anglers in on-site and mail surveys

		Active Consumers		Potential & Active Consumers	
		On-Site* N=322	Mail N=1045	On-Site* N=582	Mail N=1261
Mean gpd		22.9	19.8	9.8	16.4
Median gpd		7.6	9.5	0	7.6
Mode gpd		3.8	5.7	0	0
	50 <sup>th</sup>	7.6	9.5	0	7.6
	80 <sup>th</sup>	23.6	28.4	7.6	23.6
	90 <sup>th</sup>	60.5	37.8	18.9	37.8
	95 <sup>th</sup>	136.1	60.5	37.8	60.5
	99 <sup>th</sup>	181.41	181.4	181.4	181.4

\* On-site data are weighted by the inverse of fishing rate to correct for the effect of participation bias on calculation of average consumption value.

### Limitations of Study

This study was designed to determine the consumption rates of Indiana anglers, particularly those in minority and low income groups, during a portion of the year. Extrapolating the data to a yearly mean gpd consumption rate is tenuous. The angler interview for this study began in late April and went through the end of August. As anglers were asked about their fishing frequency for the three months prior to the survey,

this has the recall period beginning in mid-February. This does not provide for year round calculation of gpd consumed as data for the period of September through January were not collected.

The research of Meredith and Malvestuto (1996) suggests that the lowest consumption of sport caught fish takes place during the spring. By isolating the data collected prior to June 15, 1998 (those anglers with a recall period that contains the spring), the mean gpd consumption was 21.6 for active consuming anglers. The over all mean gpd for active consuming anglers throughout the study was 22.9 gpd. Thus, consumption rates for this period (spring) appear to be similar to overall rates.

Additionally, the researchers looked into the issue of year round fishing patterns. In conversations with a Division of Fish and Wildlife fisheries biologist responsible for Indiana creel surveys, it was indicated that there is high variability in fishing rates. Fishing during the year (e.g. the winter) fluctuates based upon the weather and it cannot be assumed that there is an automatic reduction in consumption rates.

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**Appendix A**  
**Weighting Survey Data**

## **Need for Weighting On-site Interview Data**

### **Introduction**

Important methodological issues emerged from the statewide project assessing sport-caught fish consumption patterns of state anglers. The objective of the project was to determine an average consumption rate for fish obtained through recreational fishing. Although two methods were used to reach anglers, a mail survey and an onsite survey, the latter method was subject to participation bias among anglers interviewed in the on-site locations. The most active anglers were more likely to be encountered and interviewed by the survey team.

As higher participation levels in fishing are likely associated with more opportunities for catching fish, more active anglers are likely to have higher consumption rates. More active anglers' consumption data would contribute to an estimate of average consumption rate calculation that was too high among anglers interviewed in the on-site locations. Weighting data based on the inverse of fishing participation was necessary to address the participation bias, and sport fish consumption was calculated with weights assigned.

### **Literature Review**

The use of weighting must be considered carefully. This has been noted for making inferences from recreation research (Christensen, 1979). Often the reason for using weighting is to correct for selection bias (Whitehead, Groothuis, Hoban, and Clifford, 1994). Weighting has been identified previously as an issue in food consumption research (Tucker, Bianchi, Maras, and Bermudez, 1998) and in nutrition surveys (Osler and Schroll, 1992). When measuring fish consumption levels, it is important to address variation in the estimates based on use of different methods and variables (Cavan, Gibson, Cole, and Riedel, 1996).

Weighting has been used to avoid bias in certain estimates resulting from those of higher social status, such as higher-income groups participating at a different rate (e.g. times per year) than others in the population (Harou, 1982). Among those interviewed onsite it may be necessary to correct for a 'travel time bias' in making particular estimates of use (Wna, 1989). Weighting may also be employed to correct for differing

variability in observations. In one case of using weighted least squares estimation the issue is getting more reliable estimates not removing bias (Beaman, Knetsch and Cheung, 1977).

In recreation research, the selection of a respondent often depends on the level of participation in a recreational activity at a location. Onsite survey methods must be designed with due consideration of how respondents are selected and how this should impact on their contribution to getting unbiased estimates of a particular measure of interest. How respondents are selected can result in unweighted averages of expenditure and person days of site use both being biased. Getting unbiased estimates requires 2 different weighting schemes.

If different respondents exhibit a different level of participation based on some measure, e.g., visits, and respondents are selected for interview on final exit, one must consider what measures to estimate to meet various survey objectives. Some people visit a site only 1 or 2 times a year but may stay for 2 weeks one of those times. Others make repeated visits to a place (every nice weekend for 15 or 20 weekend and day-visits). This is an issue when measuring use at national parks, at forest areas or at specific fishing sites (Beaman and Redkop, 1990; Price, 1991; Roeder, 1973).

## Method

It was important to correct for the bias from highly active anglers when calculating the consumption rate for sport fish among Indiana anglers interviewed in the on-site survey. This is achieved by weighting each respondent by the inverse of some fishing activity rate. Table 1 shows the weights that were assigned to each case by using the inverse of the fishing frequency measure obtained for the recall period.

Table A.1. Weights assigned to on-site respondent data.

Variable Response	Code for fishing frequency/month	Weight Assigned
< Once/month	0.5	$1/0.5 = 2$
Once/month	1	1
2-3 times/month	2.5	0.4
Once/week	4	0.25
2-4 times/week	12	0.0833
5-7 times/week	24	0.0417

## Example of Weighting Calculation

Table A.2. GPD by fishing rate and inverse of fishing rate for weighting purposes.

Fishing Rate (times per month)	2-4 days per week 12	Once a week 4	2-3 days per month 2.5	Total
Inverse of fishing rate x 100 = weighting value	8.33	25.00	40.00	
GPDJUNE	.00	1	1	3
	2.84	1		1
	5.67		1	1
	7.56	1		1
Total		3	2	6

Potential and Active Consumers

Example: 6 respondents

Unweighted:

$$3 (0 \text{ GPD}) + 1 (2.84 \text{ GPD}) + 1 (5.67 \text{ GPD}) + 1 (7.56 \text{ GPD}) = 16.07 / 6 = \underline{2.68 \text{ GPD}}$$

Weighted:

6 respondents are represented by a sample size (N) of 115.

$$(0 \text{ GPD} \times 8.33) + (0 \text{ GPD} \times 25) + (0 \text{ GPD} \times 40) + (2.84 \text{ GPD} \times 8.33) + (5.67 \text{ GPD} \times 25) + (7.56 \text{ GPD} \times 8.33) =$$

$$228.382 / 115 = \underline{1.99 \text{ GPD}}$$

Note that the N becomes 115, because each respondent is given a weighting value:

$$8.33 + 25 + 40 + 8.33 + 25 + 8.33 = 114.99 = 115$$

Active Consumers

Example: 3 respondents

Unweighted:

$$2.84 + 5.67 + 7.56 = 16.07 / 3 = \underline{5.36 \text{ GPD}}$$

Weighted:

$$(2.84 \text{ GPD} \times 8.33) + (5.67 \text{ GPD} \times 25) + (7.56 \text{ GPD} \times 8.33) = 228.382 / 42 = \underline{5.44 \text{ GPD}}$$

3 respondents are represented by a sample size of 42, because

$$8.33 + 25 + 8.33 = 41.66 = 42$$

## Summary

This research provides an example of the potential impact of biases in research conducted in recreation settings. On-site interviews have a frequency of participation or length of stay bias that can be corrected by weighting techniques to provide unbiased or less biased estimates of the measure of interest. In the fish consumption project the objective of the agency was an average measure for on-site anglers statewide. Average consumption rate for active consumers assessed using weighted on-site data was similar to the rate observed for active consumers in the mail survey. Weighting was necessary to calculate an estimate of average sport fish consumption among on-site anglers and to provide information to the funding agency for policy decisions.

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**Appendix B**  
**Survey Locations**

East Chicago Area

Hammond Marina

Pastrick Marina

Wolf Lake

Whiting Park

Wihala Park

Fort Wayne Area

Hurshstown Reservoir

Lakeside Park

Johnny Appleseed Park

Maumee/Kreeger Park

Lawton Park

Indianapolis Area

White River

Eagle Creek Park

Fort Harrison State Park

Jeffersonville Area

Falls of the Ohio State Park

Deam Lake State Recreation

Area

Evansville Area

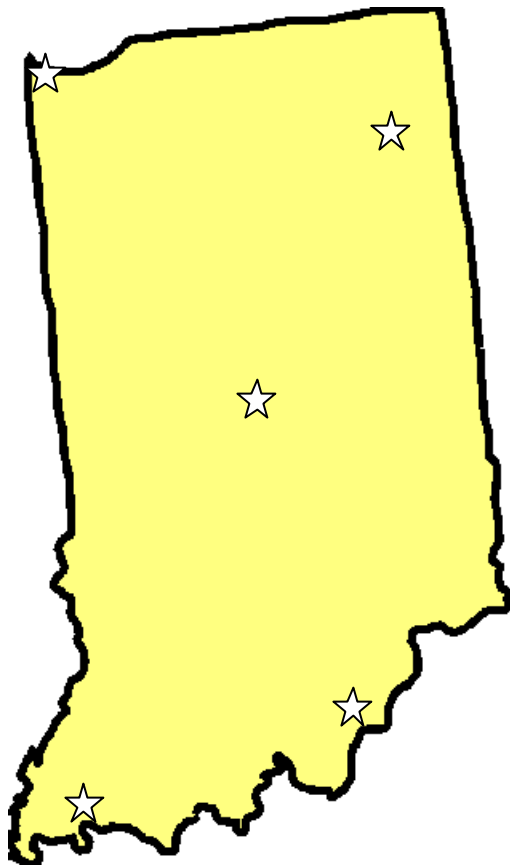
Ohio River

Garvin Park

Diamond Lake

Mountoux Park

Burdette Park



**Appendix C**  
**Survey Instrument**

## INDIANA ANGLER AND FISH CONSUMPTION SURVEY - *ON SITE*

Location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

### Location Questions

1. Is this your first time fishing at this site?    ☐ yes (If yes, go to question 2)    ☐ no

1a. If no, how often have you have you fished at *this location* in the *past three months*?

- ☐ Less than once a month
- ☐ Once a month
- ☐ 2-3 days a month
- ☐ Once a week
- ☐ 2-4 days a week
- ☐ 5-7 days a week

1b. How often have you fished at *this location* in the *past 7 days*?    \_\_\_\_\_ days

2. What will you do with your catch today?

- ☐ Use for a meal in my household
- ☐ Give to others outside of my household
- ☐ Release it or discard

### Consumption

1. How often in the *last three months* have you fished in Indiana waters?

- ☐ Less than once a month
- ☐ Once a month
- ☐ 2-3 days a month
- ☐ Once a week
- ☐ 2-4 days a week
- ☐ 5-7 days a week
- ☐ Not at all – I have not fished in Indiana waters in the past three months

2. In the *last week*, did you eat any Indiana sport caught fish?

- ☐ Yes    ☐ No

3. In the *last week*, did any other members of your household eat Indiana sport caught fish?

- ☐ Yes    ☐ No

4. In the *last three months*, how often did you eat Indiana sport caught fish?

- ☐ Less than once a month
- ☐ Once a month
- ☐ 2-3 days a month
- ☐ Once a week
- ☐ 2-4 days a week
- ☐ 5-7 days a week
- ☐ Not at all – I have not eaten Indiana sport caught fish in the past three months.

5. What is the *typical portion size* of Indiana sport caught fish you eat? Based on the photographs, what portion size would you typically consume in a *normal meal*?

☐ less than 4 oz.      ☐ 8 oz (1/2 lb.)      ☐ 14 oz.  
☐ 4 oz (1/4 lb.)      ☐ 10 oz.      ☐ 16 oz. (1 lb.)  
☐ 6 oz.      ☐ 12 oz (3/4 lb.)

6. How aware of consumption advisory warnings for Indiana sport caught fish are you?

☐ Very aware      ☐ Generally aware      ☐ Not aware

7. How frequently do you follow the consumption advisory warnings when you decide whether or not to *eat* Indiana sport caught fish?

Always      Usually      Sometimes      Rarely      Never  
 5      4      3      2      1

8. How frequently do you follow the consumption advisory warnings when *cleaning and/or cooking* Indiana sport caught fish?

Always      Usually      Sometimes      Rarely      Never  
 5      4      3      2      1

### Demographics

1. What is your gender?      ☐ Male      ☐ Female

2. What is your age at your last birthday?      \_\_\_\_\_ Years

3. What is your race?

☐ Asian American or Pacific Islander      ☐ African American  
☐ White, not Hispanic      ☐ Native American Indian  
☐ Hispanic American      ☐ Mixed Race  
☐ Other. Please indicate: \_\_\_\_\_

4. What was your household income before taxes?

☐ \$5,000 or under      ☐ \$5,000-9,999      ☐ \$10,000-14,999  
☐ \$15,000-24,999      ☐ \$25,000-34,999      ☐ \$35,000-49,999  
☐ \$50,000-74,999      ☐ \$75,000 or above

5. What is your current employment status?

☐ Employed full time      ☐ Employed part time      ☐ Laid off  
☐ Student      ☐ Disabled      ☐ Retired  
☐ Unemployed, looking for work      ☐ Unemployed, not looking for work

6. How many people are in your household?      \_\_\_\_\_ Adults      \_\_\_\_\_ Children

7. What is your highest level of education?

0 1 2 3 4 5 6 7 8      9 10 11 12      13 14 15 16 17+  
 Grade School      High School      College

8. In what county do you reside? \_\_\_\_\_

## Questionario sobre la pesca de caña y el consumo de pescado en Indiana

### Preguntas en la zona de pesca

1. Es ésta la primera vez que pesca, concretamente, en este lugar?

☐ Sí (vaya a la segunda question) ☐ No

1a. En caso negativo, cuántas veces ha pescado en este lugar durante los últimos tres meses?

- ☐ Menos de una vez por mes
- ☐ Una vez por mes
- ☐ 2-3 veces al mes
- ☐ Una vez por semana
- ☐ 2-4 veces por semana
- ☐ 5-7 veces por semana

1b. Con qué frecuencia ha pescado en *este lugar* en los últimos 7 días?  días

2. Qué va a hacer con lo que pesque hoy?

- ☐ Comerlo en casa
- ☐ Darlo a terceros
- ☐ Liberarlo en el agua

### Consumo

1. En los *últimos tres mese* cuán frecuentement ha pescado usted en aguas de Indiana?

- ☐ Menos de una vez por mes
- ☐ Una vez por mes
- ☐ 2-3 veces al mes
- ☐ Una vez por semana
- ☐ 2-4 veces por semana
- ☐ 5-7 veces por semana
- ☐ NO, en los últimos tres mese no he comido ningún pescado que haya sido pescado en Indiana

2. En la última semana ha usted comido algún pescado que haya sido pescado en Indiana?

☐ Sí ☐ No

3. En la última semana, cualquier otro mimbros de su familia, ha comido algún pescado que haya sido pescado en Indiana?

☐ Sí ☐ No

4. En los *últimos tres mese* cuán frecuentement ha comido usted algún pescado que haya sido pescado en Indiana?

- ☐ Menos de una vez por mes
- ☐ Una vez por mes
- ☐ 2-3 veces al mes
- ☐ Una vez por semana
- ☐ 2-4 veces por semana
- ☐ 5-7 veces por semana
- ☐ No, en los últimos tres meses no he comido ningún pescado que haya sido pescado en

5. Qué *ración típica* come usted de pescado que haya sido pescado en Indiana? Mire las fotografías y apunte que ración comería usted normarmelte?

☐ menos de 4 oz.      ☐ 8 oz (1/2 lb.)      ☐ 14 oz.  
☐ 4 oz (1/4 lb.)      ☐ 10 oz.      ☐ 16 oz. (1 lb.)  
☐ 6 oz.      ☐ 12 oz (3/4 lb.)

6. Está usted familiarizado con las leyes de consumo de peces pescados en Indiana?

☐ Mucho      ☐ Bastante      ☐ No del todo

7. Con qué frecuencia obedece las leyes de consumo de peces pescados en Indiana para decidir si come o no come lo pescado?

Siempre      Generalmente      A veces      Raramente      Nunca  
 1                      2                      3                      4                      5

8. Con qué frecuencia obedece las leyes de consumo de peces pescados en Indiana para limpiar y/o para concinar lo pescado?

Siempre      Generalmente      A veces      Raramente      Nunca  
 1                      2                      3                      4                      5

### Datos Demográficos

1. Sexo?      ☐ Varon      ☐ Hembra

2. Cuántos años tiene usted? \_\_\_\_\_ años

3. De qué raza es usted?

☐ Americano-Asiático o Islas del Pacífico      ☐ Africano-Americano  
☐ Blanco, no hispano      ☐ Indio nativo Americano  
☐ Hispano Americano      ☐ Razas mixtas  
☐ Otro, Por favor indique \_\_\_\_\_

4. Cuál es el salario bruto (sin impuestos) de su casa/familia?

☐ \$5,000 o menos      ☐ \$5,000-9,999      ☐ \$10,000-14,999  
☐ \$15,000-24,999      ☐ \$25,000-34,999      ☐ \$35,000-49,999  
☐ \$50,000-74,999      ☐ \$75,000 o mas

5. Qué tipo d empleado es usted?

☐ Tiempo completo      ☐ Tiempo partido      ☐ "laid off"  
☐ Estudiante      ☐ Incapacitado      ☐ Jubilado  
☐ Parado, buscando trabajo      ☐ Parado, no busco trabajo

6. Cuántas personas hay en su familia?      ☐ Adultos      ☐ Niños

7. Cuántos años de educación académica tiene usted?

1 2 3 4 5 6 7 8                      9 10 11 12                      13 14 15 16 17+  
 Educación elemental                      Educación secundaria                      Universidad

8. En qué condado vive usted? \_\_\_\_\_

## **Card given to anglers at completion of interview**

Dear Angler:

Thank you for taking the time to answer the survey questions today. All of the responses will remain anonymous. The answers you provided will be used to better understand the activities of anglers in Indiana, particularly in terms of fish consumption habits, and aid in making decisions that affect water quality, angler health, and the use of fishing resources.

Should you have any questions regarding Indiana fish consumption advisories, you can contact the Indiana Department of Environmental Management or the Division of Fish and Wildlife. If you have any questions regarding this study, please feel free to contact me. Once again, thank you for your participation.

Sincerely,

Joseph T. O'Leary  
Professor

Department of Forestry and Natural Resources  
1200 Forest Products Building  
West Lafayette, IN 47907-1200  
Phone: (765)494-3622  
Email: [jto@fnr.purdue.edu](mailto:jto@fnr.purdue.edu)

## Appendix D

### Variable Frequency

#### Respond

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Respondent	946	97.0	97.0	97.0
Non-respondent	29	3.0	3.0	100.0
Total	975	100.0	100.0	

### Frequency Table: Respondents

#### location

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Gary area: Hammond Marina	18	1.9	1.9	1.9
Gary area: Pastrick Marina	14	1.5	1.5	3.4
Gary area: Wolf Lake	118	12.5	12.5	15.9
Gary area: Whiting Park	3	.3	.3	16.2
Gary area: Whiting Park	2	.2	.2	16.4
Ft. Wayne: Hurshtown Reservoir	73	7.7	7.7	24.1
Ft. Wayne: Lakeside Park	31	3.3	3.3	27.4
Ft. Wayne: Johnny Appleseed Park	65	6.9	6.9	34.2
Ft. Wyane: Maumee/Kreeger Park	2	.2	.2	34.5
Ft. Wayne: Lawton Park	2	.2	.2	34.7
Indianapolis: White River	32	3.4	3.4	38.1
Indianapolis: Eagle Creek Park	252	26.6	26.6	64.7
Indianapolis: Ft. Benjamin Harrison State Park	39	4.1	4.1	68.8
Indianapolis: Other	4	.4	.4	69.2
Jeffersonville: Falls of the Ohio State Park	101	10.7	10.7	79.9
Jeffersonville: Deam Lake State Recreation Area	35	3.7	3.7	83.6
Evansville: Ohio River	33	3.5	3.5	87.1
Evansville: Garvin Park	43	4.5	4.5	91.6
Evansville: Diamond Lake	15	1.6	1.6	93.2
Evansville: Mountoux Park	22	2.3	2.3	95.6
Evansville: Other	8	.8	.8	96.4
Evansville: Burdette Park	34	3.6	3.6	100.0
Total	946	100.0	100.0	

**DATE**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	42598	15	1.6	1.6	1.6
	51698	37	3.9	3.9	5.5
	51798	63	6.7	6.7	12.2
	52398	37	3.9	3.9	16.1
	52498	31	3.3	3.3	19.3
	60698	71	7.5	7.5	26.8
	60798	66	7.0	7.0	33.8
	61398	25	2.6	2.6	36.5
	62098	19	2.0	2.0	38.5
	62198	17	1.8	1.8	40.3
	62798	25	2.6	2.6	42.9
	62898	26	2.7	2.7	45.7
	70398	45	4.8	4.8	50.4
	70498	39	4.1	4.1	54.5
	70598	55	5.8	5.8	60.4
	71198	22	2.3	2.3	62.7
	71298	28	3.0	3.0	65.6
	71598	1	.1	.1	65.8
	71898	48	5.1	5.1	70.8
	71998	13	1.4	1.4	72.2
	72598	48	5.1	5.1	77.3
	72698	45	4.8	4.8	82.0
	80198	40	4.2	4.2	86.3
	80298	28	3.0	3.0	89.2
	80898	26	2.7	2.7	92.0
	80998	29	3.1	3.1	95.0
	82198	16	1.7	1.7	96.7
	82298	19	2.0	2.0	98.7
	83198	12	1.3	1.3	100.0
	Total	946	100.0	100.0	

## Time

	Frequency	Percent	Valid Percent	Cumulative Percent
725	1	.1	.1	.1
730	9	1.0	1.0	1.1
735	3	.3	.3	1.4
737	1	.1	.1	1.5
740	8	.8	.8	2.3
745	2	.2	.2	2.5
750	3	.3	.3	2.9
755	3	.3	.3	3.2
800	12	1.3	1.3	4.4
805	6	.6	.6	5.1
810	4	.4	.4	5.5
812	1	.1	.1	5.6
815	5	.5	.5	6.1
818	1	.1	.1	6.2
820	11	1.2	1.2	7.4
825	2	.2	.2	7.6
830	13	1.4	1.4	9.0
835	6	.6	.6	9.6
840	6	.6	.6	10.3
845	10	1.1	1.1	11.3
848	1	.1	.1	11.4
850	14	1.5	1.5	12.9
855	8	.8	.8	13.7
900	14	1.5	1.5	15.2
905	4	.4	.4	15.6
910	4	.4	.4	16.1
915	7	.7	.7	16.8
920	3	.3	.3	17.1
925	3	.3	.3	17.4
930	10	1.1	1.1	18.5
935	2	.2	.2	18.7
940	9	1.0	1.0	19.7
945	8	.8	.8	20.5
950	12	1.3	1.3	21.8
955	9	1.0	1.0	22.7
1000	7	.7	.7	23.5
1005	4	.4	.4	23.9
1010	10	1.1	1.1	24.9
1012	1	.1	.1	25.1
1015	9	1.0	1.0	26.0
1020	7	.7	.7	26.7
1025	4	.4	.4	27.2
1030	12	1.3	1.3	28.4
1035	4	.4	.4	28.9
1040	14	1.5	1.5	30.3
1045	11	1.2	1.2	31.5
1048	1	.1	.1	31.6
1050	7	.7	.7	32.3
1055	6	.6	.6	33.0
1100	16	1.7	1.7	34.7
1102	1	.1	.1	34.8
1103	1	.1	.1	34.9
1105	2	.2	.2	35.1
1110	10	1.1	1.1	36.2
1112	1	.1	.1	36.3
1114	1	.1	.1	36.4
1115	7	.7	.7	37.1
1120	5	.5	.5	37.6
1122	1	.1	.1	37.7
1125	2	.2	.2	37.9
1130	10	1.1	1.1	39.0
1135	2	.2	.2	39.2
1140	2	.2	.2	39.4
1145	5	.5	.5	40.0
1150	7	.7	.7	40.7
1151	1	.1	.1	40.8
1154	1	.1	.1	40.9
1155	1	.1	.1	41.0
1200	8	.8	.8	41.9
1205	8	.8	.8	42.7
1210	6	.6	.6	43.3
1213	1	.1	.1	43.4
1215	7	.7	.7	44.2
1220	7	.7	.7	44.9
1225	1	.1	.1	45.0
1230	10	1.1	1.1	46.1

1233	1	.1	.1	46.2
1235	5	.5	.5	46.7
1240	3	.3	.3	47.0
1245	5	.5	.5	47.6
1250	9	1.0	1.0	48.5
1300	7	.7	.7	49.3
1305	4	.4	.4	49.7
1310	2	.2	.2	49.9
1315	8	.8	.8	50.7
1317	1	.1	.1	50.8
1320	15	1.6	1.6	52.4
1323	1	.1	.1	52.5
1325	5	.5	.5	53.1
1330	8	.8	.8	53.9
1335	8	.8	.8	54.8
1340	6	.6	.6	55.4
1345	8	.8	.8	56.2
1350	2	.2	.2	56.4
1355	1	.1	.1	56.6
1400	21	2.2	2.2	58.8
1405	5	.5	.5	59.3
1410	11	1.2	1.2	60.5
1415	5	.5	.5	61.0
1420	13	1.4	1.4	62.4
1430	16	1.7	1.7	64.1
1435	1	.1	.1	64.2
1440	8	.8	.8	65.0
1445	4	.4	.4	65.4
1450	14	1.5	1.5	66.9
1455	3	.3	.3	67.2
1500	14	1.5	1.5	68.7
1505	4	.4	.4	69.1
1510	7	.7	.7	69.9
1511	1	.1	.1	70.0
1515	10	1.1	1.1	71.0
1520	9	1.0	1.0	72.0
1525	8	.8	.8	72.8
1530	24	2.5	2.5	75.4
1535	7	.7	.7	76.1
1540	3	.3	.3	76.4
1545	6	.6	.6	77.1
1550	13	1.4	1.4	78.4
1553	1	.1	.1	78.5
1555	6	.6	.6	79.2
1556	1	.1	.1	79.3
1600	15	1.6	1.6	80.9
1603	2	.2	.2	81.1
1605	6	.6	.6	81.7
1610	7	.7	.7	82.5
1615	5	.5	.5	83.0
1620	11	1.2	1.2	84.1
1625	4	.4	.4	84.6
1630	8	.8	.8	85.4
1635	5	.5	.5	85.9
1640	5	.5	.5	86.5
1645	5	.5	.5	87.0
1650	4	.4	.4	87.4
1655	4	.4	.4	87.8
1700	7	.7	.7	88.6
1705	1	.1	.1	88.7
1710	4	.4	.4	89.1
1715	3	.3	.3	89.4
1720	8	.8	.8	90.3
1725	2	.2	.2	90.5
1730	8	.8	.8	91.3
1735	1	.1	.1	91.4
1740	2	.2	.2	91.6
1745	5	.5	.5	92.2
1750	2	.2	.2	92.4
1755	2	.2	.2	92.6
1800	8	.8	.8	93.4
1810	4	.4	.4	93.9
1815	3	.3	.3	94.2
1820	2	.2	.2	94.4
1825	2	.2	.2	94.6
1830	5	.5	.5	95.1
1835	4	.4	.4	95.6
1840	3	.3	.3	95.9
1845	6	.6	.6	96.5
1850	4	.4	.4	96.9

1855	1	.1	.1	97.0
1900	6	.6	.6	97.7
1905	1	.1	.1	97.8
1910	3	.3	.3	98.1
1915	4	.4	.4	98.5
1930	6	.6	.6	99.2
1945	2	.2	.2	99.4
2000	2	.2	.2	99.6
2010	1	.1	.1	99.7
2020	1	.1	.1	99.8
2030	2	.2	.2	100.0
Total	946	100.0	100.0	

#### site1st

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	763	80.7	80.7	80.7
	Yes	180	19.0	19.0	99.8
	Blank	2	.2	.2	100.0
	Total	945	99.9	100.0	
Missing	System	1	.1		
Total		946	100.0		

#### site3month

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than once a month	270	28.5	35.2	35.2
	Once a month	123	13.0	16.0	51.2
	2-3 days per month	128	13.5	16.7	67.8
	Once a week	79	8.4	10.3	78.1
	2-4 days per week	126	13.3	16.4	94.5
	5-7 days per week	30	3.2	3.9	98.4
	Blank	12	1.3	1.6	100.0
	Total	768	81.2	100.0	
Missing	System	178	18.8		
Total		946	100.0		

#### site days

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 days	461	48.7	59.9	59.9
	1 day	115	12.2	15.0	74.9
	2 days	74	7.8	9.6	84.5
	3 days	48	5.1	6.2	90.8
	4 days	27	2.9	3.5	94.3
	5 days	10	1.1	1.3	95.6
	6 days	6	.6	.8	96.4
	7days	14	1.5	1.8	98.2
	Blank	14	1.5	1.8	100.0
	Total	769	81.3	100.0	
Missing	System	177	18.7		
Total		946	100.0		

### Today's Catch

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Use it for a meal in my household	326	34.5	34.7	34.7
	Give it to others outside my household	78	8.2	8.3	43.0
	Release it or discard	529	55.9	56.3	99.3
	Blank	7	.7	.7	100.0
	Total	940	99.4	100.0	
Missing	System	6	.6		
Total		946	100.0		

### fishing frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than once a month	163	17.2	17.2	17.2
	Once a month	106	11.2	11.2	28.4
	2-3 days per month	166	17.5	17.5	46.0
	Once a week	121	12.8	12.8	58.8
	2-4 days per week	230	24.3	24.3	83.1
	5-7 days per week	68	7.2	7.2	90.3
	Not at all	81	8.6	8.6	98.8
	Blank	11	1.2	1.2	100.0
	Total	946	100.0	100.0	

### Eat fish in last week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	799	84.5	84.5	84.5
	Yes	135	14.3	14.3	98.7
	Blank	12	1.3	1.3	100.0
	Total	946	100.0	100.0	

### Others in household ate during past week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	816	86.3	86.3	86.3
	Yes	117	12.4	12.4	98.6
	Blank	13	1.4	1.4	100.0
	Total	946	100.0	100.0	

**Ate fish in last three months**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid less than one meal/month	90	9.5	9.5	9.5
one meal/month	85	9.0	9.0	18.5
2-3 meals/month	61	6.4	6.4	24.9
one meal/week	52	5.5	5.5	30.4
2-4 meals/week	32	3.4	3.4	33.8
5-7 meals/week	7	.7	.7	34.6
never	612	64.7	64.7	99.3
blank	7	.7	.7	100.0
Total	946	100.0	100.0	

**portion size**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0 oz	34	3.6	3.6	3.6
less than 4 oz.	4	.4	.4	4.0
4 oz. (1/4 lb.)	5	.5	.5	4.6
6 oz	77	8.1	8.1	12.7
8 oz (1/2 lb.)	143	15.1	15.1	27.8
10 oz.	118	12.5	12.5	40.3
12 oz. (3/4 lb.)	113	11.9	12.0	52.3
14 oz.	17	1.8	1.8	54.1
16 oz. (1 lb.)	105	11.1	11.1	65.2
don't eat	329	34.8	34.8	100.0
Total	945	99.9	100.0	
Missing System	1	.1		
Total	946	100.0		

**aware of advisories**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid no, not aware	329	34.8	34.8	34.8
yes, generally aware	307	32.5	32.5	67.2
yes, very aware	303	32.0	32.0	99.3
blank	7	.7	.7	100.0
Total	946	100.0	100.0	

**follow advisory eat fish**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid never	86	9.1	9.1	9.1
rarely	27	2.9	2.9	11.9
sometimes	27	2.9	2.9	14.8
usually	76	8.0	8.0	22.8
always	321	33.9	33.9	56.8
Don't eat/not applicable	223	23.6	23.6	80.3
not aware	164	17.3	17.3	97.7
blank	22	2.3	2.3	100.0
Total	946	100.0	100.0	

follow advisory cook fish

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	105	11.1	11.1	11.1
	rarely	14	1.5	1.5	12.6
	sometimes	18	1.9	1.9	14.5
	usually	51	5.4	5.4	19.9
	always	293	31.0	31.0	51.0
	Don't eat/not applicable	244	25.8	25.8	76.8
	not aware	187	19.8	19.8	96.6
	blank	32	3.4	3.4	100.0
	Total	944	99.8	100.0	
Missing	System	2	.2		
Total		946	100.0		

gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	816	86.3	86.3	86.3
	female	127	13.4	13.4	99.8
	blank	2	.2	.2	100.0
	Total	945	99.9	100.0	
Missing	System	1	.1		
Total		946	100.0		

## age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16	4	.4	.4	.4
	17	2	.2	.2	.6
	18	5	.5	.5	1.2
	19	8	.8	.8	2.0
	20	11	1.2	1.2	3.2
	21	9	1.0	1.0	4.1
	22	13	1.4	1.4	5.5
	23	23	2.4	2.4	7.9
	24	25	2.6	2.6	10.6
	25	25	2.6	2.6	13.2
	26	23	2.4	2.4	15.6
	27	22	2.3	2.3	18.0
	28	20	2.1	2.1	20.1
	29	29	3.1	3.1	23.2
	30	32	3.4	3.4	26.5
	31	25	2.6	2.6	29.2
	32	23	2.4	2.4	31.6
	33	33	3.5	3.5	35.1
	34	33	3.5	3.5	38.6
	35	31	3.3	3.3	41.9
	36	27	2.9	2.9	44.7
	37	28	3.0	3.0	47.7
	38	27	2.9	2.9	50.5
	39	41	4.3	4.3	54.9
	40	35	3.7	3.7	58.6
	41	28	3.0	3.0	61.5
	42	22	2.3	2.3	63.8
	43	26	2.7	2.7	66.6
	44	22	2.3	2.3	68.9
	45	21	2.2	2.2	71.1
	46	14	1.5	1.5	72.6
	47	24	2.5	2.5	75.2
	48	17	1.8	1.8	77.0
	49	17	1.8	1.8	78.8
	50	24	2.5	2.5	81.3
	51	12	1.3	1.3	82.6
	52	11	1.2	1.2	83.7
	53	13	1.4	1.4	85.1
	54	8	.8	.8	85.9
	55	17	1.8	1.8	87.7
	56	14	1.5	1.5	89.2
	57	6	.6	.6	89.9
	58	10	1.1	1.1	90.9
	59	6	.6	.6	91.5
	60	5	.5	.5	92.1
	61	9	1.0	1.0	93.0
	62	5	.5	.5	93.6
	63	1	.1	.1	93.7
	64	6	.6	.6	94.3
	65	11	1.2	1.2	95.5
	66	2	.2	.2	95.7
	67	5	.5	.5	96.2
	68	2	.2	.2	96.4
	69	1	.1	.1	96.5
	70	3	.3	.3	96.8
	71	1	.1	.1	96.9
	72	7	.7	.7	97.7
	73	3	.3	.3	98.0
	76	2	.2	.2	98.2
	77	4	.4	.4	98.6
	78	1	.1	.1	98.7
	79	1	.1	.1	98.8
	81	1	.1	.1	98.9
	83	1	.1	.1	99.0
	84	1	.1	.1	99.2
	86	1	.1	.1	99.3
	999	7	.7	.7	100.0
Total		946	100.0	100.0	

**race**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Asian American or Pacific Islander	10	1.1	1.1	1.1
	White, not Hispanic	640	67.7	67.7	68.7
	Hispanic American	32	3.4	3.4	72.1
	African American	235	24.8	24.8	96.9
	Native American Indian	7	.7	.7	97.7
	Mixed Race	5	.5	.5	98.2
	Other	9	1.0	1.0	99.2
	no response	8	.8	.8	100.0
	Total	946	100.0	100.0	

**income**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	under \$5,000	37	3.9	3.9	3.9
	\$5,000-9,999	22	2.3	2.3	6.3
	\$10,000-14,999	39	4.1	4.1	10.4
	\$15,000-24,999	154	16.3	16.3	26.7
	\$25,000-34,999	188	19.9	19.9	46.6
	\$35,000-49,999	160	16.9	16.9	63.6
	\$50,000-74,999	161	17.0	17.1	80.6
	over \$75,000	54	5.7	5.7	86.3
	no response	129	13.6	13.7	100.0
	Total	944	99.8	100.0	
Missing	System	2	.2		
Total		946	100.0		

**employment**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	other	9	1.0	1.0	1.0
	Employed full time	720	76.1	76.3	77.2
	Employed part time	44	4.7	4.7	81.9
	Laid off	6	.6	.6	82.5
	Student	11	1.2	1.2	83.7
	Disabled	38	4.0	4.0	87.7
	Retired	68	7.2	7.2	94.9
	Unemployed, looking for work	28	3.0	3.0	97.9
	Unemployed, not looking for work	5	.5	.5	98.4
	Blank	15	1.6	1.6	100.0
	Total	944	99.8	100.0	
Missing	System	2	.2		
Total		946	100.0		

# adults in household

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	185	19.6	19.6	19.6
2	595	62.9	62.9	82.5
3	109	11.5	11.5	94.0
4	35	3.7	3.7	97.7
5	12	1.3	1.3	98.9
7	2	.2	.2	99.2
14	1	.1	.1	99.3
99	7	.7	.7	100.0
Total	946	100.0	100.0	

Children

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	428	45.2	45.2	45.2
1	175	18.5	18.5	63.7
2	195	20.6	20.6	84.4
3	87	9.2	9.2	93.6
4	36	3.8	3.8	97.4
5	10	1.1	1.1	98.4
6	3	.3	.3	98.7
7	1	.1	.1	98.8
8	4	.4	.4	99.3
99	7	.7	.7	100.0
Total	946	100.0	100.0	

years of education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Grade School	1	.1	.1	.1
3	1	.1	.1	.2
5	3	.3	.3	.5
7	4	.4	.4	1.0
8	22	2.3	2.3	3.3
high school	35	3.7	3.7	7.0
10	51	5.4	5.4	12.4
11	44	4.7	4.7	17.0
12	423	44.7	44.7	61.7
college	67	7.1	7.1	68.8
14	123	13.0	13.0	81.8
15	36	3.8	3.8	85.6
16	91	9.6	9.6	95.2
17	28	3.0	3.0	98.2
99	17	1.8	1.8	100.0
Total	946	100.0	100.0	

county

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	.2	.2	.2
	2	152	16.1	16.3	16.6
	6	2	.2	.2	16.8
	9	1	.1	.1	16.9
	10	38	4.0	4.1	21.0
	11	1	.1	.1	21.1
	12	1	.1	.1	21.2
	17	5	.5	.5	21.7
	20	1	.1	.1	21.8
	22	11	1.2	1.2	23.0
	27	1	.1	.1	23.1
	28	1	.1	.1	23.2
	29	10	1.1	1.1	24.3
	32	11	1.2	1.2	25.5
	39	19	2.0	2.0	27.5
	41	1	.1	.1	27.6
	45	120	12.7	12.9	40.5
	47	3	.3	.3	40.9
	48	2	.2	.2	41.1
	49	283	29.9	30.4	71.5
	56	1	.1	.1	71.6
	64	1	.1	.1	71.7
	67	1	.1	.1	71.8
	71	1	.1	.1	71.9
	72	1	.1	.1	72.0
	73	1	.1	.1	72.2
	82	110	11.6	11.8	84.0
	84	1	.1	.1	84.1
	85	1	.1	.1	84.2
	87	32	3.4	3.4	87.6
	88	4	.4	.4	88.1
	91	1	.1	.1	88.2
	92	4	.4	.4	88.6
	93	25	2.6	2.7	91.3
	94	64	6.8	6.9	98.2
	96	2	.2	.2	98.4
	98	6	.6	.6	99.0
	99	9	1.0	1.0	100.0
	Total	930	98.3	100.0	
Missing	System	16	1.7		
Total		946	100.0		

## Frequency Table: Non-Respondents

### location

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Gary area: Hammond Marina	1	3.4	3.4	3.4
Gary area: Wolf Lake	7	24.1	24.1	27.6
Gary area: Whiting Park	1	3.4	3.4	31.0
Ft. Wayne: Hurshtown Reservoir	3	10.3	10.3	41.4
Ft. Wayne: Lakeside Park	1	3.4	3.4	44.8
Ft. Wayne: Johnny Appleseed Park	2	6.9	6.9	51.7
Indianapolis: Eagle Creek Park	6	20.7	20.7	72.4
Indianapolis: Other	1	3.4	3.4	75.9
Jeffersonville: Falls of the Ohio State Park	4	13.8	13.8	89.7
Evansville: Ohio River	2	6.9	6.9	96.6
Evansville: Garvin Park	1	3.4	3.4	100.0
Total	29	100.0	100.0	

### DATE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 42598	1	3.4	3.4	3.4
51698	3	10.3	10.3	13.8
51798	5	17.2	17.2	31.0
52398	1	3.4	3.4	34.5
52498	4	13.8	13.8	48.3
60698	1	3.4	3.4	51.7
60798	2	6.9	6.9	58.6
62898	1	3.4	3.4	62.1
70498	1	3.4	3.4	65.5
70598	1	3.4	3.4	69.0
71198	2	6.9	6.9	75.9
71298	1	3.4	3.4	79.3
71898	2	6.9	6.9	86.2
71998	1	3.4	3.4	89.7
72698	3	10.3	10.3	100.0
Total	29	100.0	100.0	

**time**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	830	2	6.9	6.9	6.9
	905	1	3.4	3.4	10.3
	910	1	3.4	3.4	13.8
	940	1	3.4	3.4	17.2
	1010	3	10.3	10.3	27.6
	1015	1	3.4	3.4	31.0
	1054	1	3.4	3.4	34.5
	1100	1	3.4	3.4	37.9
	1140	1	3.4	3.4	41.4
	1155	1	3.4	3.4	44.8
	1210	1	3.4	3.4	48.3
	1250	1	3.4	3.4	51.7
	1320	1	3.4	3.4	55.2
	1325	1	3.4	3.4	58.6
	1400	1	3.4	3.4	62.1
	1420	2	6.9	6.9	69.0
	1530	1	3.4	3.4	72.4
	1535	1	3.4	3.4	75.9
	1545	1	3.4	3.4	79.3
	1645	1	3.4	3.4	82.8
	1730	3	10.3	10.3	93.1
	1900	2	6.9	6.9	100.0
	Total	29	100.0	100.0	

**gender**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	22	75.9	75.9	75.9
	female	7	24.1	24.1	100.0
	Total	29	100.0	100.0	

**age**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25	1	3.4	3.6	3.6
	30	7	24.1	25.0	28.6
	35	2	6.9	7.1	35.7
	40	3	10.3	10.7	46.4
	45	3	10.3	10.7	57.1
	50	3	10.3	10.7	67.9
	60	6	20.7	21.4	89.3
	65	1	3.4	3.6	92.9
	67	1	3.4	3.6	96.4
	75	1	3.4	3.6	100.0
	Total	28	96.6	100.0	
Missing	System	1	3.4		
Total		29	100.0		

**race**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Asian American or Pacific Islander	2	6.9	6.9	6.9
	White, not Hispanic	19	65.5	65.5	72.4
	Hispanic American	3	10.3	10.3	82.8
	African American	5	17.2	17.2	100.0
	Total	29	100.0	100.0	